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## 5.1 Traffic and Transportation

*When it opens in 2009, the Bellevue Nickel Improvement Project will increase the number of vehicles able to travel through the study area, improve travel speeds, and improve safety by reducing the potential for congestion-related accidents.*

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The I-405 Corridor serves as an important transportation thoroughfare for the region. Traffic levels in the corridor have increased as a result of growth in the regional economy and associated changes in employment and population.

Understanding how traffic and transportation conditions change over time is important to developing and maintaining an efficient and effective transportation system.

This section of the EA describes the current traffic conditions on the Bellevue segment of I-405 and predicts what those conditions will be like in the future, both with and without the Bellevue Nickel Improvement Project.

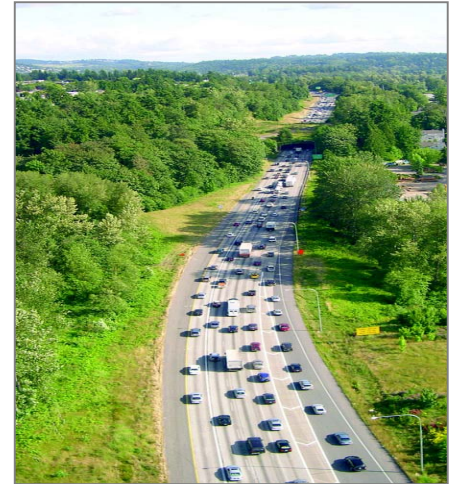
### What is traffic on I-405 like now?

The I-405 Corridor Program EIS used freeway traffic data for the year 2002 to represent existing traffic conditions in the corridor. We also used the 2002 traffic data in this EA because it is the most current data available.

The 2002 traffic data show that the portion of I-405 through Bellevue within the study area is one of the busiest segments of the entire I-405 corridor. Each weekday an average of 210,000 vehicles travel this portion of the freeway.

In the AM peak period, northbound is the peak travel direction for I-405 in the study area (Exhibit 5.1-1). Northbound I-405 between I-90 and Southeast 8th Street carried 7,000 vehicles and 8,970 persons during the 2002 AM Peak Hour. Northbound general purpose lanes averaged speeds of 30 to 45 miles per hour.

In the PM peak period, southbound is the peak travel direction for I-405 in the study area (Exhibit 5.1-1). Southbound I-405 between Southeast 8th Street and I-90 carried 6,130 vehicles and



**Southbound afternoon traffic on I-405 heading into the Wilburton Tunnel**

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*Please refer to the Bellevue Nickel Improvement Project Traffic and Transportation Discipline Report in Appendix D (on CD) for a complete discussion of the traffic analysis.*

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### What is the Peak Period?

The period of the day during which the maximum amount of travel occurs. The peak period may be specified as the morning (AM) or the afternoon (PM) peak.

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**Peak vs. Off-Peak Travel Directions**

Peak travel direction is the direction of the freeway with higher demand and more congestion.

Off-Peak travel direction is the direction of the freeway with the lower demand.

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**General Purpose Lanes**

Roadway lanes available for use by all traffic.

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**High Occupancy Vehicle (HOV) Lanes**

Roadway lanes available for buses, vanpools, and carpools with more than one occupant. Currently, two or more occupants per vehicle are required by WSDOT to use the I-405 HOV Lanes.

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8,060 persons in the 2002 PM Peak Hour. Average speeds in the southbound general purpose lanes ranged between 15 and 30 miles per hour.

Traffic in the HOV lanes generally flows freely during both the AM and PM peak periods. Off-peak directions also experience delays and congestion.

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## Are there safety concerns in the study area?

We reviewed historical accident information for 2001, 2002, and 2003, the most recent information available for this analysis.

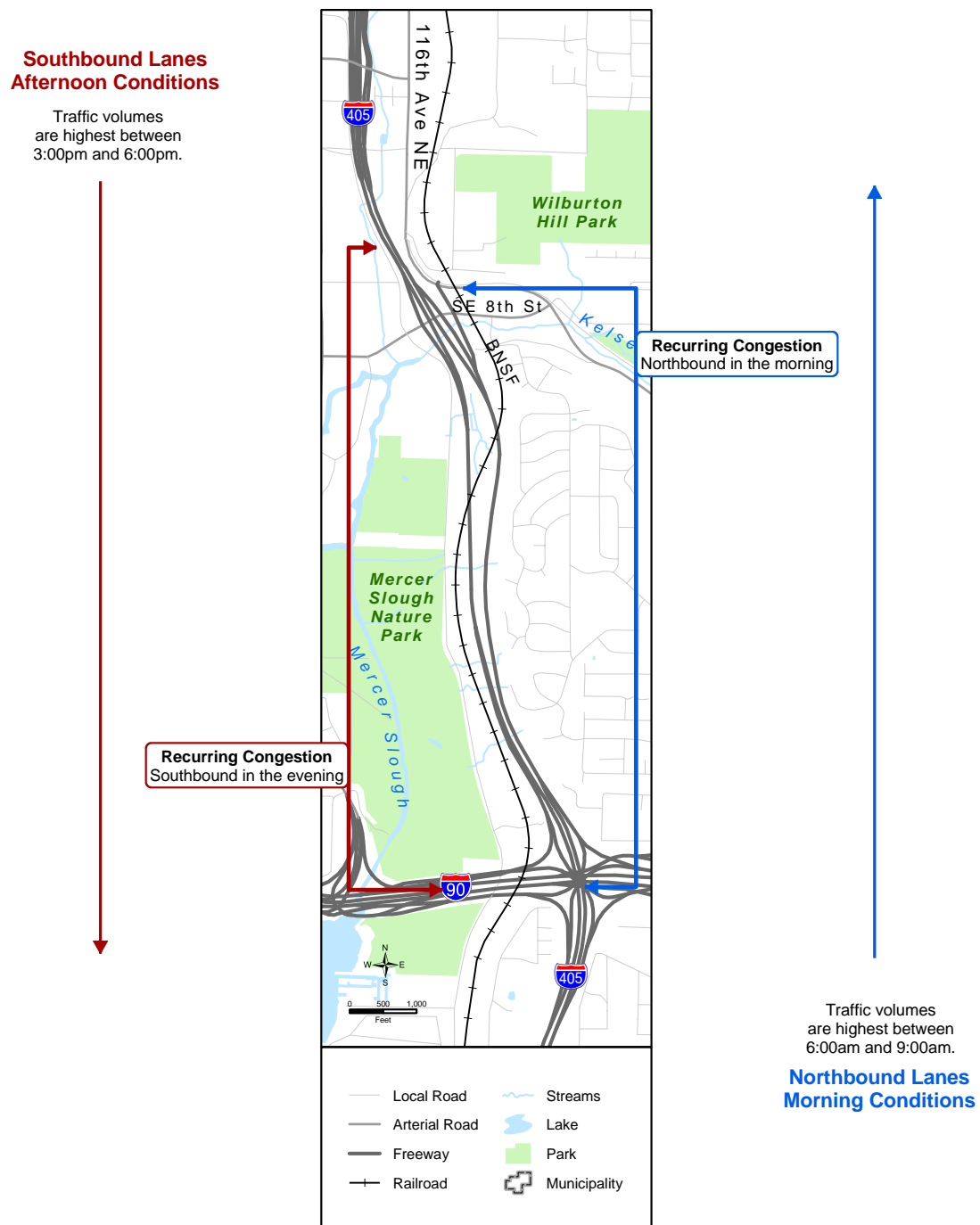
The accident rate in the study area was 1.08 accidents per million vehicle miles of travel, lower than the average for the I-405 corridor. The overall accident rate along I-405 was 1.48. This outcome is similar to other freeways in King County.

The majority (49 percent) of the accidents in this area were rear-end-type accidents. The prevalence of this type of accident is consistent with the high traffic volumes and traffic congestion in this area.

## What transit service is available in the study area?

King County Metro (Metro) and Sound Transit provide transit service within the Bellevue Nickel Improvement Project study area. Four Metro bus routes (167, 243, 280, and 952), travel on I-405 and serve the Wilburton Park-and-Ride via bus stops on the I-405 ramps at Southeast 8th Street. The Wilburton Park-and-Ride is adjacent to the I-405 southbound off-ramp to Southeast 8th Street. Metro routes 342 and 885 serve the Wilburton Park-and-Ride via local streets. Sound Transit routes 564 and 565 travel on I-405 through the study area.

## Exhibit 5.1-1. Traffic Conditions Today



## How well do the local surface streets operate today?

We looked at AM and PM Peak Hour traffic volumes on local surface streets to determine average delay per vehicle at the following six signalized intersections:

- Southeast 8th Street and 114th Avenue Southeast
- Southeast 8th Street and 118th Avenue Southeast
- I-405 southbound ramps at Southeast 8th Street
- I-405 northbound ramps at Southeast 8th Street
- I-405 northbound off-ramp at Lake Hills Connector
- Southeast 8th Street and 121st Avenue Southeast

We found that overall, local surface streets operate with moderate levels of congestion. Some turning movements have backups during the AM and PM Peak Hours.

## How did we determine future traffic volumes?

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### **Puget Sound Regional Council (PSRC) travel forecast model**

A computer model that predicts regional traffic volumes and travel patterns based on population and employment projections for King, Snohomish, Pierce, and Kitsap Counties.

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We used the Puget Sound Regional Council (PSRC) four-county travel forecast model as a starting point for determining future traffic volumes on I-405 within the study area.

Using the model, we then calculated future traffic volumes on I-405 within the study area for the years 2014 and 2030. We used the 2014 to represent a conservative date for when the project would be open to traffic (even though we plan to have the project open by fall 2009). We used 2030 to be consistent with the planning horizon used for the I-405 Corridor Program.

Our forecasts for 2014 and 2030 assume that growth in HOV volumes on I-405 will require a change in WSDOT policy regarding the number of persons per vehicle required to use the HOV lanes. Currently, vehicles with two or more persons can use the HOV lanes. By 2014, we assume the requirement will change to three or more persons per vehicle.

## How will the project affect future traffic volumes on I-405?

Future regional population and employment growth will increase traffic volumes on I-405 compared to today. The additional lanes provided by the Bellevue Nickel Improvement Project will allow more vehicles to travel through the study area than do today. The additional lanes will also allow northbound and southbound traffic traveling through the area on local surface streets to shift to I-405.

With the completed project, we predict a combined total of 225,000 vehicles per day will travel on the northbound and southbound lanes of I-405 between I-90 and Southeast 8th Street in 2014. If we do not build the project, traffic volumes would still increase to 218,000 vehicles per day.

While daily traffic volumes increase with the Bellevue Nickel Improvement Project, the improvements will have little effect on future traffic volumes during the AM and PM Peak Hours. In 2014, existing bottlenecks on I-405 south of the study area at 112th Avenue/Coal Creek Parkway, and north of the study area on SR 520, will continue to slow traffic on I-405, thereby limiting the number of vehicles that can travel through the study area during the AM and PM peak travel periods. The most notable change in traffic volumes will be off peak when traffic volumes are lower.

WSDOT forecasts 2014 traffic volumes on the HOV lanes to be lower than existing volumes. This is because the traffic model assumes a change in the vehicle occupancy requirement to use the HOV lanes from the current “two or more” occupants per vehicle to “three or more” occupants per vehicle.

## How will the project affect future freeway operations on I-405 ?

When the project opens to traffic in fall 2009, the Bellevue Nickel Improvement Project will increase the number of vehicles able to travel through the study area and improve travel speeds by as much as 15 miles per hour during the AM and PM Peak Hours (Exhibit 5.1-2). However, as traffic volumes increase over time in response to regional population and employment growth, vehicle throughput and travel speeds on I-405 will decrease during the AM and PM peak travel periods.

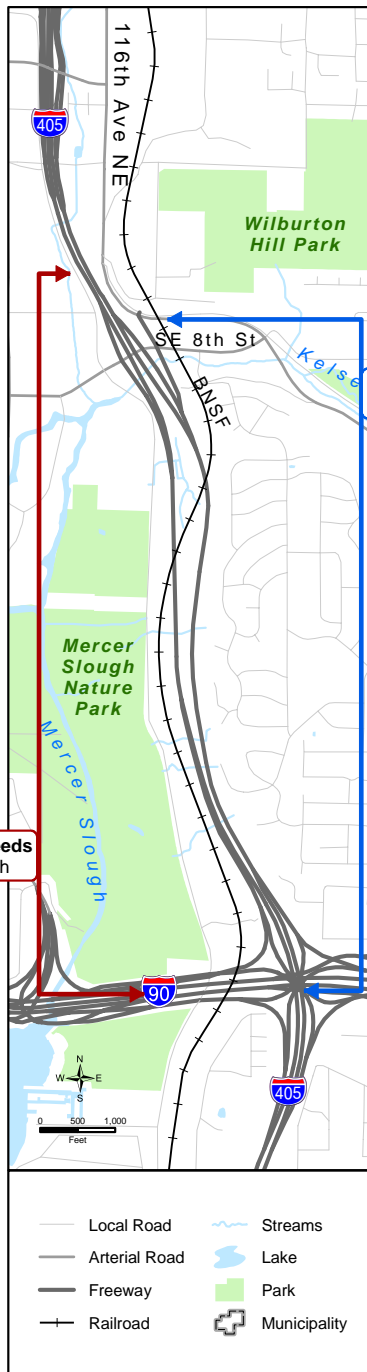
## Exhibit 5.1-2. Traffic Conditions in the Future

### Southbound Lanes Afternoon Conditions

Traffic volumes  
are highest between  
3:00pm and 6:00pm.



Improved Speeds  
up to 15 mph



Improved Speeds  
up to 15 mph



Traffic volumes  
are highest between  
6:00am and 9:00am.

### Northbound Lanes Morning Conditions

For both the AM and PM peak hours, the Bellevue Nickel Improvement Project delivers more benefits during the time before and the time after the Peak Hours when traffic volumes are lower. Compared to the No Build Alternative, the Bellevue Nickel Improvement Project will delay the onset of congestion during the peak travel periods and clear congestion more quickly after the peak travel periods.

## How will the project improve safety?

The Bellevue Nickel Improvement Project will add an additional lane northbound and southbound on I-405. The project will improve safety by reducing congestion-related accidents as compared to the No Build alternative.

Additionally, the project will improve safety at the I-90 connection to northbound I-405 because the eastbound and westbound I-90 ramps will no longer merge. With the Bellevue Nickel Improvement Project, each of these ramps will become an additional lane on I-405 northbound. This change will reduce the potential for rear-end and sideswipe collisions at this location as compared to the No Build alternative. Removing the merge will also improve safety on I-90. The improvement will decrease the number of rear-end accidents with vehicles lining up on I-90 to use the ramps to northbound I-405.

The project design includes constructing a new Wilburton Tunnel on southbound I-405 and widening the existing narrow shoulders through the tunnel to satisfy current design standards. This improvement will reduce the potential for drivers to collide with fixed objects.

The Bellevue Nickel Improvement Project will not change traffic volumes at local street intersections.

## How will the project affect transit service and HOV trips?

For both the 2014 No Build and Build Alternatives, the forecasts assume that the HOV lanes will operate differently than they do today (i.e., change from the current requirement of two or more occupants per vehicle, to a requirement of three or more occupants per vehicle).

With the future HOV lane-occupancy designation of three or more occupants per vehicle, the HOV lanes will perform well for

both the Build and No Build Alternatives. The HOV lanes will operate close to free-flow conditions of 60 miles per hour.

The Build Alternative extends the southbound I-405 HOV off-ramp to westbound I-90 northwards to the Southeast 8th Street on-ramp. This HOV lane is on the west side of the freeway. The Build Alternative also modifies the intersection of the I-405 southbound ramps with Southeast 8th Street. An HOV right-turn lane from eastbound Southeast 8th Street to the I-405 southbound on-ramp would be moved from the current location to the outside of the ramp. This modification provides a direct HOV connection from the Southeast 8th Street on-ramp to the westbound I-90 HOV lane via I-405.

The extension of the southbound I-405 HOV off-ramp to westbound I-90 northwards to Southeast 8th Street will improve transit travel time for that movement. The remaining transit peak-hour travel times will be similar for the Build and the No Build Alternatives in 2014 and 2030.

## How will local surface streets operate in the future?

Our traffic model calculated future levels of congestion on local surface streets in the study area for both the Build and No Build alternatives. The model predicts that the Build Alternative will not affect surface street traffic volumes during the 2014 AM and PM Peak Hours. Therefore, the levels of congestion expected with the Build Alternative will be approximately the same as with the No Build Alternative. With either alternative, local surface streets in the study area will operate with higher congestion levels than today.

## How will the project affect bicycle and pedestrian facilities?

The project will not have any long-term effects on bicycle or pedestrian facilities. The project will reconstruct the intersection of the I-405 southbound ramps at Southeast 8th Street. On eastbound Southeast 8th Street, we will add an exclusive HOV right-turn lane to the I-405 southbound on-ramp. During construction, there may be temporary sidewalk closures in this area. If a sidewalk is closed, we will provide an alternate route for pedestrians through the construction area.

## How will construction affect transportation?

Construction of the Bellevue Nickel Improvement Project will require temporary realignment, shifting, and/or closure of lanes on I-405. The duration, degree, and length of any traffic restriction will be limited to when it is absolutely necessary to provide safety for both the traveling public and construction personnel.

We will develop a conceptual staging plan to illustrate how construction will occur with minimal disruptions to existing traffic patterns and capacity on the I-405 and local surface streets within the study area. The main objectives of this plan will be to provide a safe facility during construction, maintain existing travel lanes, and streamline the construction schedule while minimizing environmental disturbance.

## How will we avoid or minimize adverse effects from construction?

We will develop a comprehensive traffic management plan that will be designed to maintain traffic flow on all roadways during construction. WSDOT will prepare a traffic management plan before making any changes to the traffic flow. We will coordinate with local agencies and other projects to prepare and implement the traffic management plan prior to making any changes to the traffic flow or lane closures. We will advise the public, school districts, and emergency service providers of the changes ahead of time through a public information process.

Prior to and during construction, WSDOT will implement strategies to manage the demand on transportation infrastructure. These transportation demand management strategies will form an important part of the construction management program and will be aimed at increasing public awareness of travel options in the corridor.

Appendix B includes avoidance and minimization measures that we will incorporate into the project to address effects on traffic and transportation. No additional avoidance and minimization measures for traffic and transportation effects are necessary or proposed.